and in accordance with EPA guidelines, EPA does not see the justification for redoing the analysis at this time. In addition, it should be noted that EPA guidance states that baseline risk assessments are not required to justify interim remedial actions.

In addition, the term "RME value" may not be the most appropriate term when referring to the "RME concentration". However, it should be recognized that this editorial concern has no impact on any of the conclusions of the risk assessment.

128. (RI Page 7-8) The use of the arithmetic mean and maximum values of the groundwater concentrations to estimate risk is misleading. There is no adequate definition of what these estimates represent. The mean does not represent a median estimate of risk, and the maximum concentration is effectively a theoretical upper bounding estimate (TUBE) which should be so identified. As noted by EPA:

> "The only thing that the bounding estimate can establish is a level to eliminate pathways from further consideration."
>
> "It certainly cannot be used for an estimate of actual exposure."
>
> "Bounding Estimates must not be considered to be equally as sophisticated as an estimate of a fully described pathway, and should not be described as such."

EPA, Guidelines for Exposure Assessment, 57 Fed. Reg. 22888, 22920 (May 29, 1992).

Instead, a true mean or median risk descriptor as well as a true upper bound estimate should have been derived as per the new EPA guidelines referenced above.

EPA's Response: EPA disagrees with the premise that central tendency and high end exposure estimates of risk were not determined. Exposure assumptions for the high end are consistent with the USEPA defaults provided in OSWER Directive 9285.6-03, with the exception that the exposure frequency used in the risk assessment is slightly higher.

Recognizing the limited data for the Glendale Grayson Steam Plant, a 95th UCL was not estimated for this data. Rather, a maximum value was used as is recommended by RAGS. Note that this is not necessarily an overestimate.

129. (RI Page 7-9) The use of USEPA default values should be accompanied by a description of their uncertainties and a discussion of their impact on the assessment and on the selection of the risk descriptors. The presentation suggests that the

uncertainty does not need to be further evaluated in the presentation of the risk descriptors.

EPA's Response: With respect to a discussion of the uncertainties, the authors are referred to the Uncertainty Section (Section 7.6) of the RI. In general, discussions of site-specific uncertainties are of greater relevance than are uncertainties associated with USEPA defaults.

130. (RI Page 7-9) The use of 365 days per year is unnecessarily conservative; rather, a more reasonable number, such as the number of days that 90 percent of the population stays home, should be used.

EPA' Response: It is likely that 365 days/year was chosen as the exposure frequency because the risk assessment predated the OSWER Directive 9285.6-03 that indicates a default value of 350 days/year instead of 365 days/year. Please note that the difference is so slight (365/350 = 1.0 rounded to 2 significant digits) that it makes no material difference in the outcome of the risk estimate.

131. (RI Page 7-9) In the intake equation, the use of the upper 95th percentile for CW, the 90th percentile for ED, the 90th percentile for IR, and the 100th percentile for EF is overly conservative to estimate a true high-end exposure.

EPA's Response: As noted above, in the absence of site-specific information, the USEPA defaults are recommended for consistency across sites. Also note that the 95th percentile for CW was not used as is indicated by the authors. Rather, the 95th upper confidence limit of the mean was used. These are <u>not</u> the same.

132. (RI Page 7-9) The use of the assumption that shower exposure is equivalent to ingestion of 2 liters of water is inappropriate for this assessment. The data are available to conduct a more accurate assessment of exposure by this route, and this route contributes significantly to the overall estimates of risk. The uncertainty associated with the use of this conservative assumption should be discussed and incorporated into the selection of appropriate risk descriptors.

EPA's Response: The assumption of an inhaled dose equal to ingested dose is recommended because it simplifies the risk assessment. While it is possible to model air concentrations in the shower, it is <u>not</u> necessarily an overestimate to assume that the inhaled dose is equivalent to an ingested dose (based on 2 liters/day). This is demonstrated by performing the calculations for an older house with a high air exchange rate and relatively high mixing coefficient, and a new house with low air exchange and low mixing coefficient. In the former case the estimates may be lower, in the latter case, the estimates are higher than the assumed equivalency.

133. (RI Page 7-10) The method for determining reasonableness of the height of the box model should be included in the text. Local site-specific meteorological data are available and should be incorporated. The uncertainties associated with the model and the selection of inputs to the model should be discussed and incorporated into the selection of the risk descriptor.

EPA's Response: There does not appear to be a need to fine tune the box model since the risks presented in the risk assessment for this pathway are "acceptable" and do not trigger an action. Because risks associated with the on-site receptors are "acceptable", it is unlikely that risks associated with off-site receptors would be "unacceptable" (given dispersion of the VOCs in the air column).

134. (RI Page 7-11) As for the intake equation, the repetitive use of overly conservative exposure parameters should be discussed with regard to overall uncertainty and taken into account when determining the risk descriptors.

EPA's Response: ITT is referred to the Uncertainty Section (Section 7.6) of the RI Report for the Glendale Study Area.

135. (RI Page 7-15) The assumption that RfDs are equivalent to inhalation RfCs introduces unnecessary uncertainty into the risk assessment. For most of the COCs where this practice was followed, there are data which allow for estimation of the inhalation RfC. The assumption that similar chemicals have similar toxicity also introduces uncertainty into the analysis. The classic example of similar structure and similar toxicity are ethanol and methanol. A more thorough discussion of the rationale for these assumptions should be incorporated into the assessment, and where appropriate, corrections and adjustments should be made. There are several modelling tools which would allow a structure activity comparison to be made, and there is sufficient information available to make an informed professional toxicity and absorption judgement. The impact of these assumptions should be incorporated into the general discussions on uncertainty and on the selection of the risk descriptors.

EPA's Response: Firstly, the statement that RfD's are assumed to be equivalent to inhalation RfC's is incorrect. Rather, oral RfD's are assumed to be equivalent to inhalation RfDs. This is a reasonable assumption for halogenated VOCs (This assumes that the absorption / retention rate via inhalation route is the same as that via the oral route). This assumption would not be appropriate for metals that have significantly different absorption efficiencies for the two routes. It is noted (Tables 7-8 and 7-9) that a route-to-route extrapolation was <u>not</u> performed for metals.

EPA notes that an RfD for tetrachloroethene was cross-assigned to trichloroethene (TCE). This was reasonable given the similarity

in toxicity between the two chemicals. Since the risk assessment was written, a provisional RfD for TCE has been determined by the Environmental Criteria Assessment Office (ECAO). The value is within a factor of two of the original RfD estimate for TCE. Note that because the new provisional RfD is lower (6×10^{-3} versus 1.1×10^{-2}), the resulting hazard quotient would be slightly higher (by a factor of 2) than that estimated in the risk assessment.

136. (RI Page 7-16) A discussion of the target organs impacted by the COCs should be included. For non-cancer effects, the chemicals should be segregated by target organs if the hazard index (HI) for all the COCs is greater than unity.

EPA's Response: Because the risk drivers for non-cancer concerns (halogenated VOCs) share many overlapping toxic effects, it would not be appropriate to segregate out the hazard indices. Note that segregation of hazard indices requires identification of the major effect of each chemical, including those seen at higher doses than the critical effect.

137. (RI Page 7-16) It is inappropriate to group the VOCs together and the metals together, as the individual compounds all have unique and distinct toxicities and physiological properties which should be discussed separately.

EPA Response: EPA disagrees with this comment. See EPA Response to ITT Comment 136.

138. (RI Page 7-16) This section is overly general and contains inaccuracies and misleading statements (e.g., "the presence of chlorine causes some health effects that are not caused by the benzene ring compounds").

EPA Response: These comments are editorial and do not impact the outcome of the risk assessment.

139. (RI Page 7-20) We disagree with the use of the MCL for lead to estimate a lead RfD. There are alternative methods using EPA models to establish acceptable exposures to lead based on blood levels predicted by pharmacokinetic modelling (e.g., IUBK model).

EPA Response: Comparison with the MCL is appropriate in this case since additional media data (soils, air etc.) are unavailable and the MCL would ultimately serve as the cleanup level for groundwater. Note too, that the authors of the risk assessment report have acknowledged the limitations of the approach (see page 7-12).

Further note that for the RME exposure (the scenario that is typically used for project management decisions), lead does not indicate a problem based on the MCL comparison. Applying the beta version 0.5 Lead UBK model, and using standard defaults of the

model gives similar results. If requested, EPA would be willing to provide these results.

With respect to the UBK model, the model is currently being tested and should be finalized at the beginning of 1993. The UBK model is more appropriately used in determining soil cleanup levels and not water cleanup levels, as an ARAR for water currently exists.

140. (RI Page 7-21) Without a better definition of the "RME, average and maximum" exposures, this section does not provide the risk manager with adequate information to judge the implications of these risk estimates.

EPA Response: Equations and exposure assumptions (with existing rationale and documentation) have been presented in the body of the report. It is unclear what the authors are referring to with respect to "a better definition".

141. (RI Page 7-25) Many of the inherent uncertainties in the risk assessment have been recognized in this section; however, the identification alone is inadequate. The uncertainties must be imported into the assignment of the risk descriptors and then into the interpretation of the results. This report falls short in these critical areas. This section should be revised to not only identify the potential areas of uncertainty, but also quantify them to the extent possible, eliminate or reduce the uncertainty where possible and finally to present a cohesive interpretation of these uncertainties on the overall conclusions of the risk assessment.

It is not enough to simply state that these uncertainties exist, that overall they are quite conservative and that the risk as presented in the report is likely to be overstates. This conservative overestimation of risk, coupled with the existing (and we believe incorrect) risk descriptors provides a misleading perspective on the actual risk posed by the site to the risk manager and other readers of this document.

EPA Response: EPA disagrees that these additional comments would have any impact on project management decisions. Note too, that risk information from an "actual risk" is not typically used in making management decisions. Rather, hypothetical risks associated with the reasonable maximum exposure are used to direct management decisions. Actual risks are likely to be lower than those estimated for the RME, and could even be zero.

APPENDIX A

SAN FERNANDO VALLEY INFORMATION REPOSITORIES

Copies of the Remedial Investigation Report for the Glendale Study Area (January 1992), the Feasibility Study for the Glendale Study Area North Plume Operable Unit (April 1992), the Proposed Plan for the Glendale North OU (July 1992), the Glendale North and South OU Administrative Record Files (on microfilm) and other documents pertaining to the San Fernando Valley Superfund sites are available for public review at the following five locations. If the copies of documents are not available, contact Fraser Felter, Community Relations Coordinator, at (415) 744-2181. Please note that the Glendale North and Glendale South OU Administrative Record Files are also available at EPA Region 9 Superfund Record Center, 75 Hawthorne Street, 9th Floor, in San Francisco (415-744-2165).

City of Glendale Public Library
222 East Harvard Street
Glendale, CA 91205
(818) 548-2021
Contact: Lois Brown

Hours: M-Th 10:00 am - 8:55 pm
F-Sat 10:00 am - 5:55 pm

Los Angeles Department of Water and Power (LADWP) Library
111 North Hope Street, Room 518
Los Angeles, CA 90012
(213) 481-4612
Contact: Joyce Purcell

Hours: M-F 7:30 am - 5:30 pm

City of Burbank Public Library
110 North Glenoaks Boulevard
Burbank, CA 91502
(818) 953-9741
Contact: Andrea Anzalone

Hours: M-Th 9:30 am - 9:00 pm
F 9:30 am - 6:00 pm
Sat 10:00 am - 6:00 pm

California State University Northridge Library
18111 Nordhoff Street
Northridge, CA 91330
(818) 885-2285
Contact: Mary Finley

Hours: W, Th 8:00 am - 10:00 pm
M, T, F 8:00 am - 5:00 pm

The University Research Library/U.C.L.A.
Public Affairs Service
405 Hilgard Avenue
Los Angeles, CA 90024
(310) 825-3135
Contact: Barbara Silvernail

Hours: M-Th 10:00 am - 7:00 pm
F 10:00 am - 5:00 pm
Sat, Sun 1:00 pm - 5:00 pm